



Post-traumatic Stress Disorder (PTSD) and Cerebellum

[Source: DTE](#)

Why in News?

A recent study found that individuals with [Post-traumatic Stress Disorder \(PTSD\)](#) may experience significant decreases in both **gray** and **white matter** volume in their **cerebellum**.

- This could affect their **cognitive functions** and **emotional responses**, among other aspects.

What are the Findings of the Study?

- The study showed that **PTSD** is linked with considerable reductions in both **gray** and **white matter volumes** in the cerebellum.
- This reduction was particularly notable in specific subregions, including the **posterior lobe, vermis, flocculonodular lobe and corpus medullare**.
- The study also showed that **cerebellar volume** changes correlate with the intensity of the PTSD experience, offering a **potential biomarker** for assessing the condition's severity.
- It **challenges** the traditional understanding of **PTSD as solely a disorder of the brain's emotion-processing centers**.
 - The **cerebellum's involvement suggests a more complex brain network disruption in PTSD**, one that includes regions responsible for integrating cognitive and emotional responses.
- Study helps in understanding the **pathophysiology of PTSD** by pinpointing **specific cerebellar regions** affected by the disorder.

What is Post-Traumatic Stress Disorder (PTSD)?

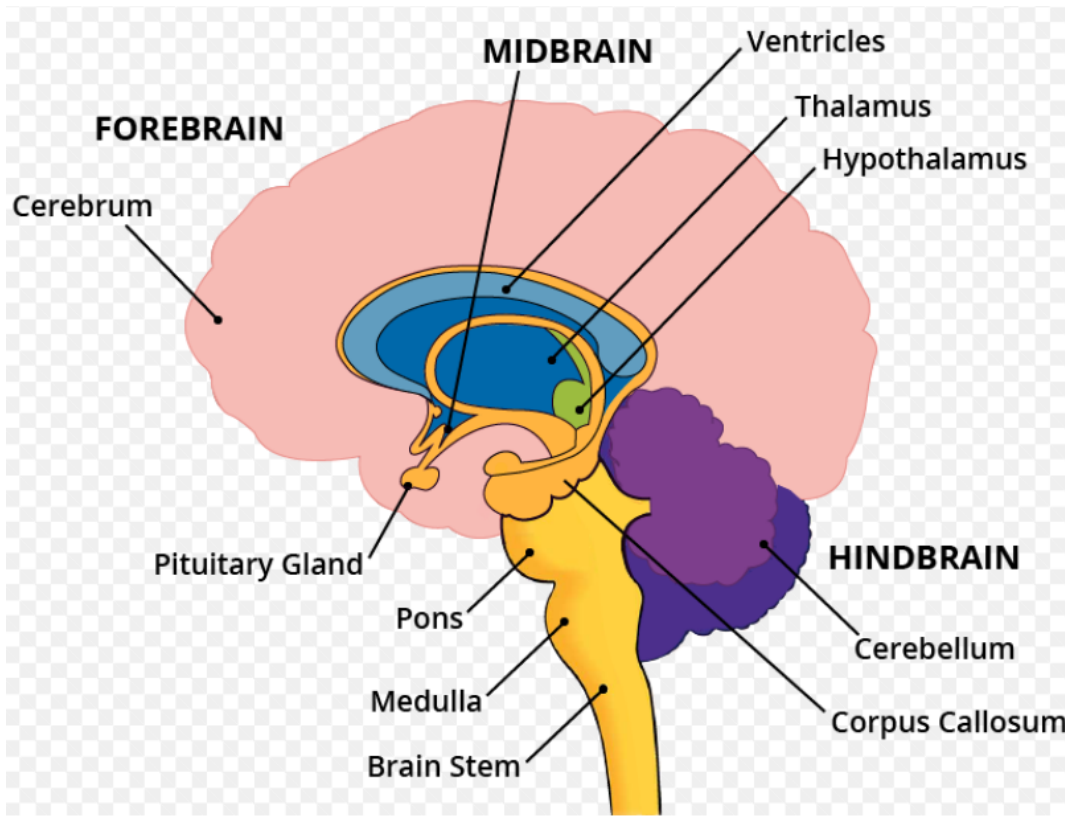
- **Post-traumatic Stress Disorder (PTSD)**, is a mental health condition that occurs after a person experiences or witnesses a traumatic event, such as **war, violence, abuse, or natural disaster**.
 - People with **PTSD** may have **intrusive memories, nightmares, flashbacks, avoidance and negative mood etc.**
 - These symptoms can interfere with their **daily functioning and quality of life**.
 - PTSD can be treated with **psychotherapy, medication, or both**.
- PTSD is incredibly burdensome at both the individual and societal level, causing **profound distress, functional impairment, and staggering treatment costs**.

What is Cerebellum and Other Parts of the Brain?

- **The brain comprises three primary components: the cerebrum, cerebellum, and brainstem.**
- **Cerebellum:** The **brain region** traditionally associated with **motor control**, but now increasingly recognised for its role in **higher cognitive** and **emotional functions**.
 - It is located at the back of the head, just below the **cerebrum** and behind the **brain stem**. Also called a **"little brain"** due to its similar but smaller structure than the **cerebrum**.
- **Cerebrum:** The **largest part**, consists of **right and left hemispheres**, playing a key role in

higher functions like **interpreting sensory information, speech, reasoning, emotions, learning, and precise movement control.**

- **Brainstem:** Functioning as a relay centre connecting the **cerebrum, cerebellum, and spinal cord.** It oversees automatic processes such as **breathing, heart rate, sleep-wake cycles, digestion,** and various reflex actions like **sneezing, coughing, vomiting, and swallowing.**
- **Hypothalamus:** Situated below the thalamus and regulates functions including **body temperature, hunger, thirst, fatigue, sleep, and circadian rhythms.** It is also involved in the **release of hormones by the pituitary gland.**



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